REMARKS

Claims 1-14 remain in this application.

Upon entry of the present amendment, claims 1, 2, 4-6, 8 and 9 will have been amended to more clearly define the invention. Claims 1 and 8 have been amended to recite variable angle prisms that adjust an angle of convergence based on a measured object distance. Claim 9 has been amended to recite passive distance measurement and active distance measurement as well as a controller therefor. Claims 2, 4 and 5 have been amended to change their dependencies. Applicants respectfully submit that all pending claims are now in condition for allowance.

In the above-referenced Official Action, the Examiner rejected claims 6, 13 and 14 under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement. The Examiner asserted that Applicants fails to explicitly explain the passive measuring and specifically questioned where the left side of the fields angle is and where in the figures the center of the left half is.

In response, Applicants note that a field angle is a term of art that refers to an angular field of view. According to the definition of angular field of view, for example, as shown in Figure 5.111 of OPTICS authored by Eugene Hecht, one skilled in the art to which it pertains or with which it is most nearly connected can find the positions of the left side of

field angle and center of the left half of the field angle, even if the figures of the present application do not explicitly depict those positions.

Applicants amended claim 6 merely to clarify the language. Each of the image pickup devices has a field angle, and the measurement point of each image pickup device is located in an inner half of the field angle. For example, as explained in the paragraph bridging pages 13 and 14, the measurement point for the right CCD is located in "the left side of the field angle with respect to the median line thereof", which refers to "the inner half"of the field angle.

"Passive measuring" is also a well-known term of art, that refers to measuring distance by using ambient light. For example, U.S. Patent No. 6,243,537, issued on June 5, 2001, explains both active measuring and passive measuring. In addition, the paragraph bridging pages 13 and 14 in the specification explains possible positions of the measurement points for passive distance measuring. Accordingly, one skilled in the art to which it pertains or with which it is most nearly connected can perform passive measuring according to the definition thereof and necessary description in the specification.

Accordingly, withdrawal of the rejections under 35 U.S.C., § 112, first paragraph is respectfully requested. Applicants have also attached to this response a copy of Figure 5.111 from OPTICS, a figure showing a left side of the field angle and the center of the left half, and a copy of U.S. Patent No. 6,243,537, for the Examiner's reference.

In the above-referenced Official Action, the Examiner rejected claim 8 under 35 U.S.C. § 102(b) as being anticipated by SORIMACHI et al. (U.S. Patent No. 4,818,858).

The Examiner further rejected claims 1-14 under 35 U.S.C. § 103(a) as being unpatentable over MURAMOTO et al. (U.S. Patent No. 6,507,359) in view of SORIMACHI et al. Applicants respectfully traverse these rejections, at least for the reasons stated below.

Claims 1 and 8 have been amended to more clearly define a structural feature of the invention and to more clearly distinguish over the applied prior art references by reciting a variable angle prism and controller that drives the variable angle prism in accordance with object distance data to vary an apex angle of the variable prism.

The image display system of MURAMOTO et al. discloses a pair of image-taking systems, and the image-taking systems are rotatable (see, e.g., the image-taking systems 201 and 202 in Figure 3.) MURAMOTO et al. further discloses a pair of image-taking systems, and the image-taking systems are rotatable and shiftable to adjust the base length (see, e.g., the image-taking systems 232 and 233 in Figure 4, and col. 8 lines 39-43.) The image display system of MURAMOTO et al. does not disclose variable angle prisms as recited in the present claims.

In contrast, in the present invention, as recited in the amended claims, a variable angle prism is provided in a light path of each pair of the photographing optical systems that

varies an angle of convergence, and a controller that drives the variable angle prism in accordance with the object distance data to vary an apex angle of the variable prism.

The visual sensor system of SORIMACHI et al., which is not the stereo camera as in the present invention, also does not disclose the variable angle prism that varies an angle of convergence. The Examiner indicated in the Official Action, that the "light path of ..." is taught in Figures 3A-3B, elements 24 and 34 in SORIMACHI et al. However, the elements 24 and 34 are mere light splitters (see, e.g. col. 3, lines 10-15), and are different from the variable angle prism as recited in the claim of present invention. Furthermore, SORIMACHI et al. discloses no controller that drives the variable angle prism in accordance with object distance data to vary an apex angle of the variable prism.

Thus, neither MURAMOTO et al. nor SORIMACHI et al. teach a variable angle prism to vary an angle of convergence or driving the variable angle prism for adjusting a convergence angle based on a measured distance to vary an apex angle of the variable prism.

Claim 9 has been amended to more clearly define another structural feature of the present invention and to more clearly distinguish over the applied prior art references by reciting, inter alia, a passive distance measurement, an active distance measurement and a controller that controls each of the pair of photographing optical systems to perform the passive distance measurement until the release button is depressed at least by half step, and

controls the object distance measuring device to perform the active distance measurement after the release button is depressed at least by half step.

The Examiner noted that, with respect to previous claims 10, 13-14 (before amendment) that MURAMOTO et al. and SORIMACHI et al. are capable of passive and active measurement. Contrary to the Examiner's assertion, it appears that, the system in MURAMOTO et al. is arranged to carry out the active-type distance measuring only, judging from the description of col. 12, lines 63-67 and col. 14, lines 20-51. In SORIMACHI et al., no distance measuring takes place, as Applicants noted in the previous response.

Furthermore, neither MURAMOTO et al. nor SORIMACHI et al. teaches a controller that controls each of the pair of photographing optical systems to perform the passive distance measurement until the release button is depressed at least by half step, and controls the object distance measuring device to perform the active distance measurement after the release button is depressed at least by half step (see. e.g. Figures 7, 12 and 17).

Accordingly, since neither MURAMOTO et al. nor SORIMACHI et al. disclose the combination of the features of Applicants' claimed invention, withdrawal of the rejections under 35 U.S.C. §102(b) based on SORIMACHI et al. and under 35 U.S.C. §103(a) based on MURAMOTO et al. in view of SORIMACHI et al. is respectfully requested. With regard to claims 2-7 and 10-14, Applicants assert that they are allowable at least because they

depend from either independent claim 1 or 9, which the Applicants submit has been shown to be allowable.

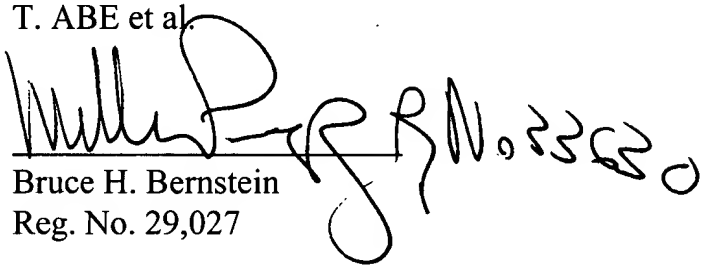
In view of the herein contained amendments and remarks, Applicants respectfully request reconsideration and withdrawal of previously asserted rejections set forth in the Official Action of June 4, 2003, together with an indication of the allowability of all pending claims, in due course. Such action is respectfully requested and is believed to be appropriate and proper.

Applicants note that the status of the present application is after final rejection and with respect to such status will set forth a clear basis for the entry of the present amendment consistent with 37 C.F.R. §1.116. Applicants note amendments after final are not entered as a matter of right. However, Applicants submit that the amendments made to the pending claims do not raise any new issues requiring further search or consideration, since the amendments to claims 1 and 8 were previously recited in claim 4. Rather, the present amendment is directed to clarifying the subject matter disclosed in the specification and drawings of the present application. It is also submitted that the present amendments do not raise the question of new matter. Further, the present response does not submit additional new claims for consideration. Moreover, the present amendment clearly places the present application in condition for allowance.

Any amendments to the claims which have been made in this amendment, and which have not been specifically noted to overcome a rejection based upon the prior art, should be considered to have been made for a purpose unrelated to patentability, and no estoppel should be deemed to attached thereto.

Should the Examiner have any questions concerning this Reply or the present application, the Examiner is respectfully requested to contact the undersigned at the telephone number listed below.

Respectfully submitted,
T. ABE et al.



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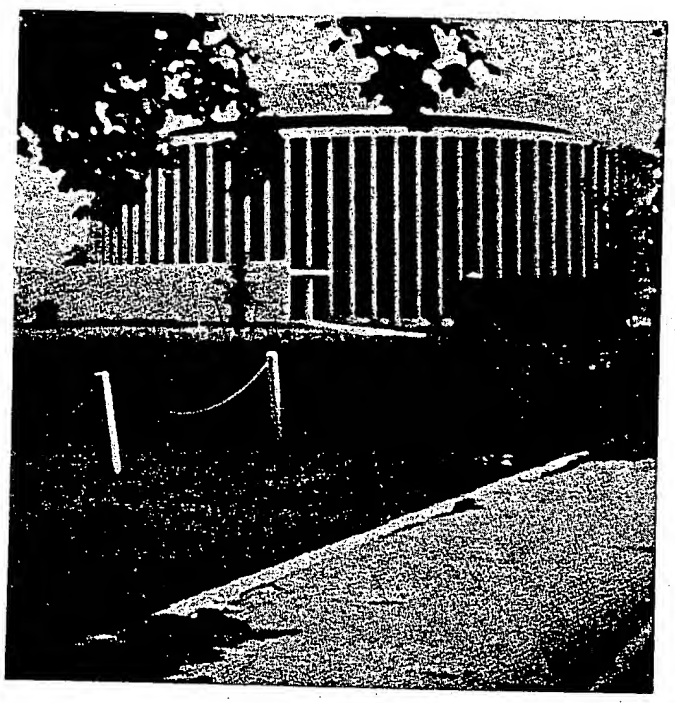


Figure 5.109 Photograph taken with a pinhole camera. (Science Building, Adelphi University). Hole diameter 0.5 mm, film plane distance 24 cm, A.S.A. 3000, shutter speed 0.25 s. Note depth of field. (Photo by E.H.)

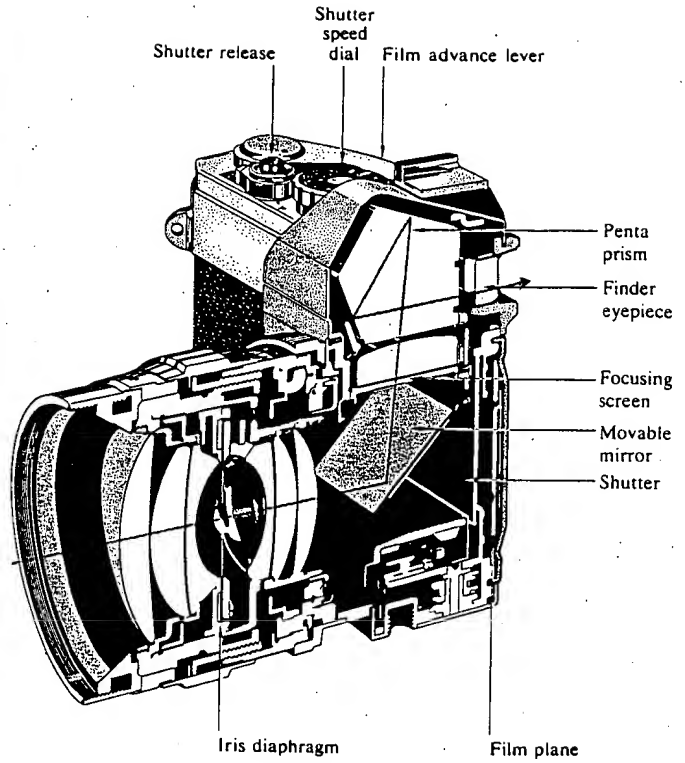


Figure 5.110 A single-lens reflex camera.

fairly popular and representative modern camera—the single-lens reflex, or SLR. Light traversing the first few elements of the lens then passes through an iris diaphragm, used in part to control the exposure time or, equivalently, the *f-number*—it is in effect a variable-aperture stop. On emerging from the lens, light strikes a movable mirror tilted at 45°, then goes up through the focusing screen to the penta prism and out the finder eyepiece. When the shutter release is pressed, the diaphragm closes down to a preset value, the mirror swings up out of the way, and the focal-plane shutter opens, exposing the film. The shutter then closes, the diaphragm opens fully, and the mirror drops back in place. Nowadays most SLR systems have any one of a number of built-in light-meter arrangements, which are automatically coupled to the diaphragm and shutter,

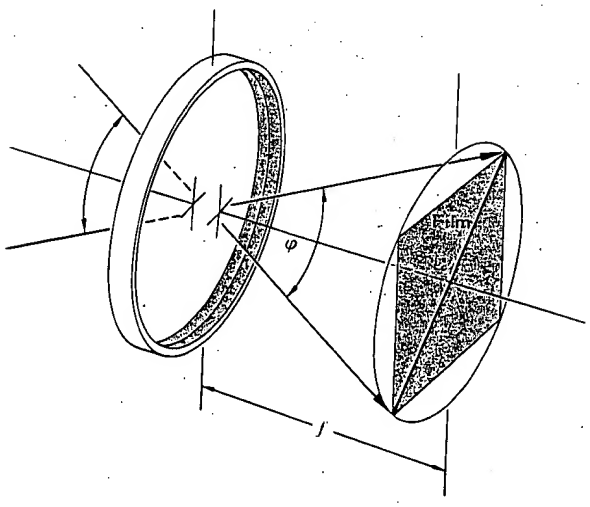


Figure 5.111 Angular field of view when focused at infinity.

but those components are excluded from the diagram for the sake of simplicity.

To focus the camera, the entire lens is moved toward or away from the film plane. Since its focal length is fixed, as s_o varies, so too must s_i. The *angular field of view* can loosely be thought of as relating to the fraction of the scene included in the photograph. It is furthermore required that the entire photograph surface correspond to a region of satisfactory image quality. More precisely, the angle subtended at the lens, by a circle encompassing the film area, is the angular field of view φ (Fig. 5.111). As a rough but reasonable approximation of a common arrangement, take the diagonal distance across the film to equal the focal length. Thus $\varphi/2 \approx$

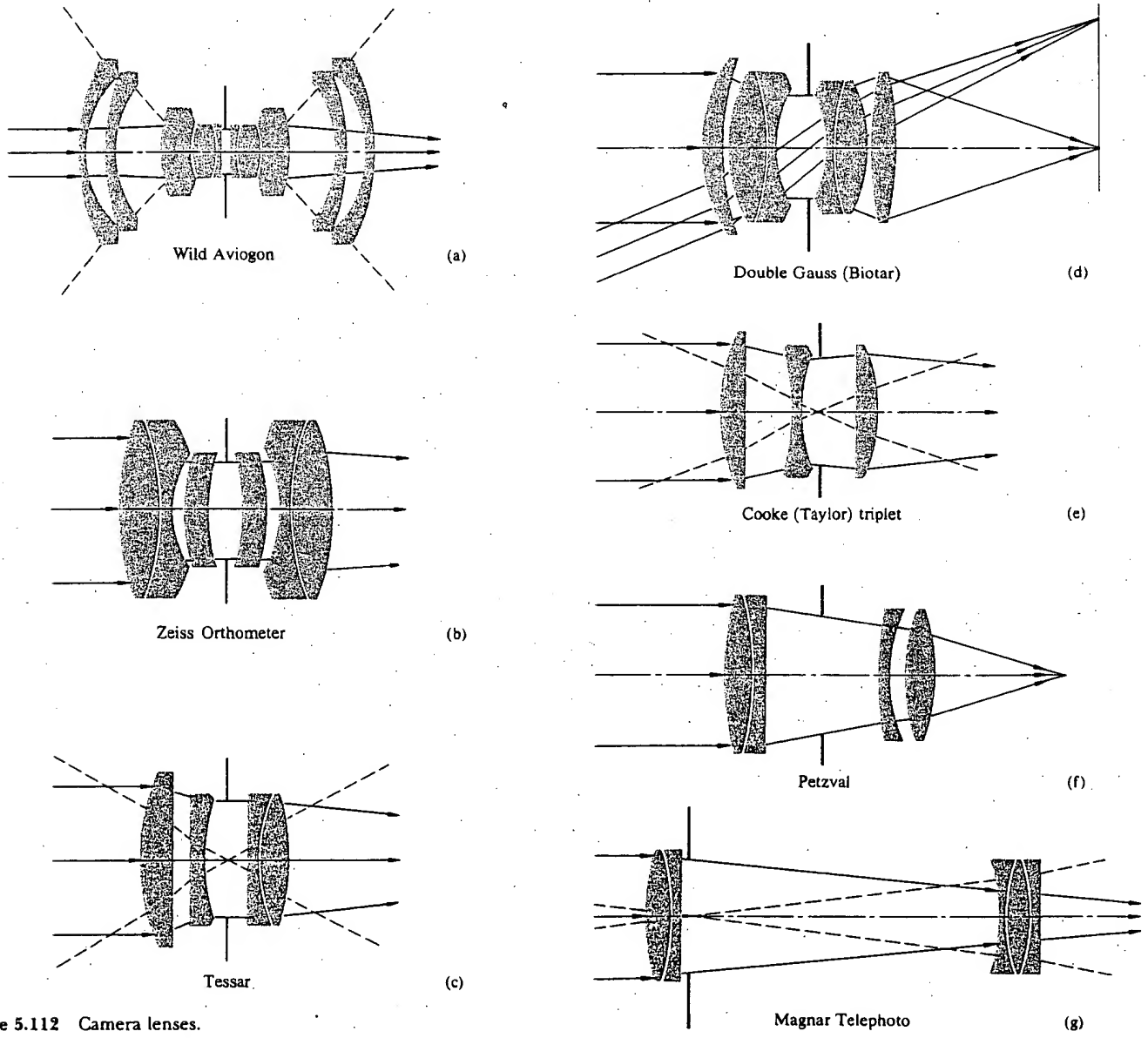


Figure 5.112 Camera lenses.

Fig.2

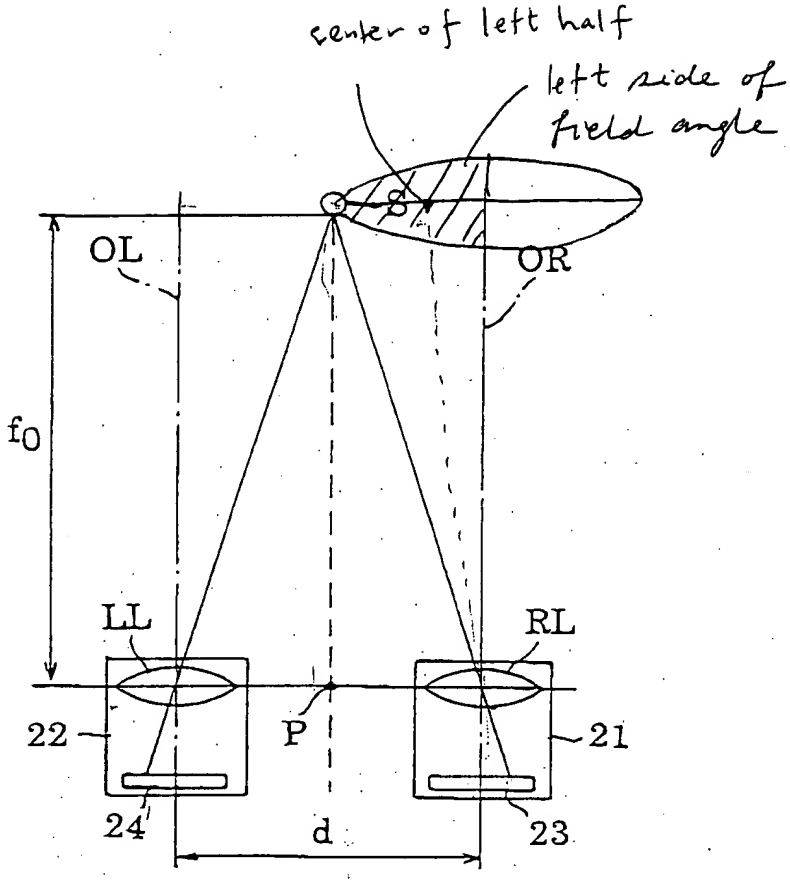
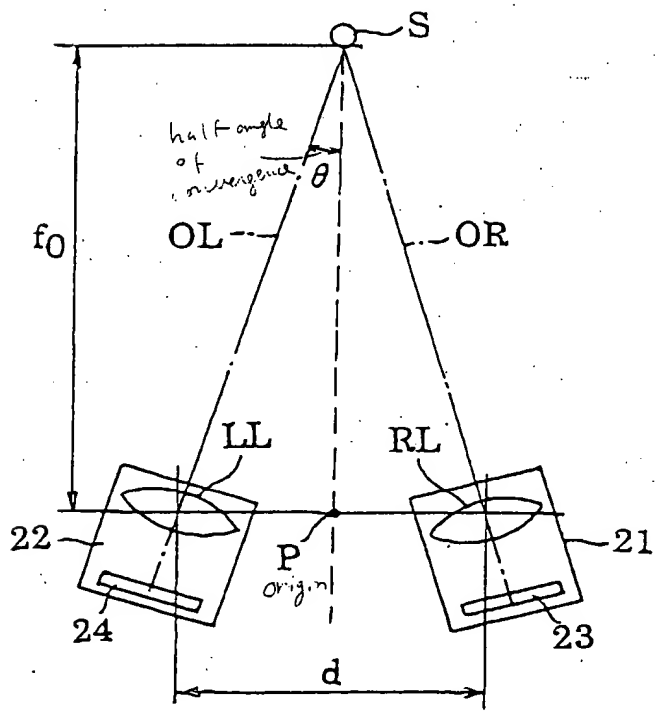

center of left half
left side of field angle
S
OL
OR
f_0
LL
RL
22
P
21
24
d
23

Fig.3


S
half angle of convergence
θ
f_0
OL
OR
LL
RL
22
P
origin
21
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d